**Amendment to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): In an OFDM communication system, a method for synchronizing a second node to a first node, the method comprising:

at said second node, receiving a series of frequency domain bursts from said first node, said frequency domain bursts including training symbols;

measuring interburst phase differences for said training symbols; ~~and~~

determining a wide frequency offset based on misalignment of a sequence of said interburst phase differences relative to a known sequence; and

determining system configuration information based on said interburst phase differences wherein said system configuration information comprises at least one of constellation size, code rate, interleaver depth, and RS parity.

Claim 2 (original): The method of claim 1 further comprising:

using said training symbols to estimate a channel response.

Claim 3 (cancelled): The method of claim 1 further comprising:

determining system configuration information based on said interburst phase differences.

Claim 4 (original): The method of claim 1 further comprising:

adjusting receiver frequency responsive to said wide frequency offset.

Claim 5 (original): The method of claim 1 wherein said sequence of interburst phase differences includes interburst phase differences for particular training symbol positions.

Claim 6 (currently amended): In an OFDM communication system, a method of synchronizing a second node to a first node, said method comprising:

developing at said first node, a series of frequency domain bursts, said frequency domain bursts including training symbols at a predetermined sequence of positions within said bursts;

including synchronization information in said frequency domain bursts encoded as a series of interburst phase differences for successive training symbol positions of said sequence; and

transmitting said frequency domain bursts to the second node; and

wherein at least one of said series of interburst phase differences further encodes system configuration information, said system configuration information comprising at least one of constellation size, code rate, interleaver depth, and RS parity.

Claim 7 (original): The method of claim 6 further comprising:

converting said frequency domain bursts to time domain bursts.

Claim 8 (cancelled): The method of claim 6 wherein at least one of said series of interburst phase differences further encodes system configuration information.

Claim 9 (original): The method of claim 8 wherein said training symbols are evenly spaced within said frequency domain bursts.

Claim 10 (currently amended): In an OFDM communication system, apparatus for synchronizing a second node to a first node, said apparatus comprising:

a system that receives a series of frequency domain bursts from said first node, said frequency domain bursts including training symbols; ~~and~~

a frequency offset processor that measures interburst phase differences for said training symbols, and that determines a wide frequency offset based on misalignment of a sequence of said interburst phase differences relative to a known sequence; and.

a system configuration processor that determines system configuration information based on said interburst phase differences, said system configuration information comprising at least one of constellation size, code rate, interleaver depth, and RS parity.

Claim 11 (original): The apparatus of claim 10 further comprising:

a channel estimation processor that uses said training symbols to estimate a channel response.

Claim 12 (cancelled): The apparatus of claim 10 further comprising:

a system configuration processor that determines system configuration information based on said interburst phase differences.

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Claim 13 (original): The apparatus of claim 10 further comprising:

a frequency control block that adjusts receiver frequency responsive to said wide frequency offset.

Claim 14 (original): The apparatus of claim 10 wherein said sequence of interburst phase differences includes interburst phase differences for particular training symbol positions.

Claim 15 (currently amended): In an OFDM communication system, apparatus for synchronizing a second node to a first node, said apparatus comprising:

a training symbol development system that develops at said first node, a series of frequency domain bursts, said frequency domain bursts including training symbols at a predetermined sequence of positions within said bursts; and

a synchronization sequence generation system that includes synchronization information in said frequency domain bursts encoded as a series of interburst phase differences for successive training symbol positions of said sequence; and

wherein at least one of said series of interburst phase differences further encodes system configuration information, said system configuration information comprising at least one of constellation size, code rate, interleaver depth, and RS parity.

Claim 16 (original): The apparatus of claim 15 further comprising:

a transform block that converts said frequency domain bursts to time domain bursts.

Claim 17 (cancelled): The apparatus of claim 15 wherein at least one of said series of interburst phase differences further encodes system configuration information.

Claim 18 (original): The apparatus of claim 17 wherein said training symbols are evenly spaced through said frequency domain bursts.

Claim 19 (currently amended): In an OFDM communication system, apparatus for synchronizing a second node to a first node, said apparatus comprising:

means for receiving a series of frequency domain bursts from said first node, said frequency domain bursts including training symbols; and

means for measuring interburst phase differences for said training ~~symbols~~ symbols; ~~and~~

means for determining a wide frequency offset based on misalignment of a sequence of said interburst phase differences relative to a known sequence; and

means for determining system configuration information based on said interburst phase differences, said system configuration information comprising at least one of constellation size, code rate, interleaver depth, and RS parity.

Claim 21 (previously presented): The apparatus of claim 19 further comprising:

means for estimating a channel response using said training symbols.

Claim 22 (cancelled).